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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,349

04/10/2007

Ayala Barak

BARAK=7

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1444 7590 04/16/2010  
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EXAMINER

SCHLIENTZ, NATHAN W

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

04/16/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,349	<b>Applicant(s)</b> BARAK, AYALA	
	<b>Examiner</b> Nathan W. Schlientz	<b>Art Unit</b> 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 95,97,99-103,105-119,122-125 and 127-133 is/are pending in the application.
- 4a) Of the above claim(s) 109,110,112-119,125,127 and 128 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 95,97,99-103,105-108,111,122-124 and 129-133 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/10/07,11/5/07,10/23/08</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The examiner for your application in the USPTO has changed. Examiner Nathan Schlientz can be reached at 571-272-9924.

It is noted that applicant's response filed 23 November 2009 has an incorrect application number, 10/586,359, listed in the header on pages 2-17. Page 1 of the response contains the correct application number, 10/586,349.

### ***Election/Restrictions***

Applicant's election of Group II in the reply filed on 23 November 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). It is also noted that applicant elected ammonium carbamate as the nitrogen-containing compound, sodium hypochlorite as the hypochlorite oxidant, and waste water or reclaimed waste water as the medium to be treated.

### ***Status of the Claims***

Claims 95, 97, 99-103, 105-119, 122-125 and 127-133 are pending in the present application. However, claims 109, 110, 112-119, 125, 127 and 128 are withdrawn from further consideration as being drawn to non-elected subject matter.

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Claims 109, 110 and 112-119 are withdrawn by the examiner because they are drawn to a medium other than waste water or reclaimed waste water. Therefore, claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-133 are examined herein on the merits for patentability. No claim is allowed at this time.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barak '386 (US 5,976,386) in view of Watanabe (US 4,476,930).

### ***Determination of the scope and content of the prior art***

**(MPEP 2141.01)**

Barak '386 teach a method and apparatus for treating a liquid to inhibit growth of living organisms therein by adding to the liquid an active biocidal ingredient formed by mixing a hypochlorite oxidant and an amine source (Abstract). The amine source may be selected from an oxidizable nitrogen derivative, preferably from the group of *ammonium salts*, organic amines, sulfamic acid, hydrazine, dimethylhydantoin, cyanuric acid benzotriazole, hexamethylene diamine, ethylenediamine, ethanolamine, or mixtures thereof, and is present in a concentration of 0.1-50%, more preferably 2.5-30%, and could be equimolar to  $\text{Cl}_2$ , with the diluted amine source having a concentration of 0.1-6% and is equimolar to  $\text{Cl}_2$  (col. 2, ln. 50-60). The oxidant is preferably selected from the group of sodium hypochlorite and calcium hypochlorite, and has a concentration of 0.3-15%, more preferably 5-15%, expressed as  $\text{Cl}_2$ , with the diluted oxidant having a concentration of 0.1-2% (col. 2, ln. 61-67 and col. 3, ln. 1-2). Preferably, the amine source is an ammonium salt containing a halide, sulfate, nitrate, carbonate, bromide, or mixtures thereof, and the oxidant is sodium hypochlorite (col. 5, ln. 1-7). See also claims 1-22.

***Ascertainment of the difference between the prior art and the claims***

**(MPEP 2141.02)**

Barak '386 do not specifically teach the ammonium salt to comprise ammonium carbamate, as instantly claimed. However, Watanabe teaches a method for treating a water-containing fluid stream passing through a conduit to inhibit the formation of scale deposited on the conduit and/or dissolve any such scale already formed (Abstract). Watanabe further teach that ammonium salts including ammonium nitrate, ammonium

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sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate all dissociate into ammonium and acid when treating said aqueous systems (col. 5, ln. 50-60; col. 6, ln. 37-42; and col. 8, ln. 9-1), and therefore the ammonium salts are functionally equivalent to one another.

Regarding the concentration of hypochlorite oxidant in said aqueous solution immediately prior to mixing with ammonium carbamate being not more than 24,000 ppm as total chlorine (claim 99), Barak '386 teaches that the concentration of hypochlorite oxidant at  $t = 0$  (i.e., immediately prior to mixing) is not more than 24,000 ppm (for example, see Tables 1-5). Also, Barak '386 teaches that the diluted oxidant has a concentration of 0.1-2%, expressed as  $\text{Cl}_2$  (col. 3, ln. 1-2; and claim 19).

Regarding the concentration of ammonium carbamate in an aqueous solution being 0.5-60% w/v prior to mixing with the hypochlorite oxidant solution (claim 100), Barak '386 teaches that the concentration of amine salt is more preferably 2.5-30% (col. 2, lines 57-58; and claims 11-13). This is within Applicant's concentration of 0.5-60%.

Regarding said mixing takes place in a mixing chamber into and out of which there is a continuous flow of water during said mixing (claim 101), and said producing said oxidant in situ in a conduit (claims 106-108), Barak '386 claim continuously mixing oxidant and amine source to produce the active biocidal ingredient and continuously injecting said active biocidal ingredient, as it is produced in situ in said conduit, directly from said conduit into the liquid being treated (Abstract; col. 1, ln. 46-67; col. 2, ln. 1-41; and claims 1 and 20-22).

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Regarding the choice of medium being waste water or reclaimed waste water (claim 111), Barak '386 teaches that the compositions are intended to treat liquid such as water in a cooling tower, waste water, or the like (col. 3, lines 36-40). Therefore, one skilled in the art would reasonably expect the biocidal compositions to be useful in aqueous systems containing waste water.

Regarding the concentration of the biocide immediately prior to being applied to said medium is from 1000-12,000 ppm expressed as total chlorine (claims 122), and the concentration of the biocide in said medium, upon application of the biocide to said medium, being 0.5-300 ppm expressed as chlorine (claim 123), Barak '386 teaches that the active biocidal ingredient produced in situ is injected into the liquid being treated preferably at a concentration of 0.5-300 ppm, more preferably 3-10 ppm, expressed as chlorine (col. 2, lines 46-49; and claims 8 and 9). The larger range is exactly the same as that of the claimed invention; one skilled in the art would readily be able to determine the concentration of biocide prior to being applied to said medium by routine experimentation, in order to arrive at the desired final concentration.

Regarding the biocidal efficacy within 1 hour of application to said medium (claim 124), the compositions of Barak '386 demonstrate reductions in the number of microorganisms of greater than 50% within 1 hour (see Tables 6 and 7), and therefore are effective within 1 hour of application to the medium.

Regarding the inclusion of a bromide (claim 129), Barak '386 teaches ammonium bromide as a suitable amine source and an active biocidal ingredient derived from ammonium bromide exhibited superior efficacy and faster rate of kill in basic media as

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compared to active biocidal ingredients derived from other amine sources (col. 3, ln. 19-22; and claim 1). Therefore, it would have been obvious to include ammonium bromide in the preparation of the active biocidal ingredient.

### **Finding of *prima facie* obviousness**

#### **Rational and Motivation (MPEP 2142-43)**

Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art at the time of the invention to select ammonium carbamate or ammonium sulfamate as the amine source in the composition of Barak '386; thus arriving at the claimed invention. One skilled in the art would have been motivated to do so because ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate are all sources of amine and acid in water treatment compositions as taught by Watanabe, and therefore are functionally equivalent to one another. Since Watanabe teaches that ammonium salts, including ammonium carbamate, ammonium sulfamate, and the ammonium salts of Barak, would dissociate into ammonium and acid in an aqueous environment, ammonium carbamate and ammonium sulfamate would function in an equivalent manner to the ammonium salts and organic amines cited in Barak. Therefore, it would be well within the purview of the skilled artisan to choose either compound as the amine source of the composition of Barak '386, since the prior art establishes the functional equivalency of ammonium carbamate or ammonium sulfamate and ammonium nitrate, ammonium sulfate, and ammonium carbonate.



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From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

It is noted by the examiner that the instant specification demonstrates in Example 7 that ammonium carbamate was superior to ammonium carbonate at killing aerobic and anaerobic bacteria when mixed with sodium hypochlorite. However, Example 7 only demonstrates superior antibacterial activity of ammonium carbamate when compared to ammonium carbonate at 1.4-8.4 ppm. Therefore, the data in Example 7 is not commensurate in scope with the instant claims.

Thus, it is noted that "a method for controlling microbial or biofilm growth in a medium, the method comprising mixing ammonium carbamate and an aqueous solution of a hypochlorite oxidant to form a biocide, wherein the molar ratio of ammonium to hypochlorite is at least 1:1, and applying said biocide to said medium, wherein the concentration of said biocide in said medium, upon application of said biocide to said medium, is 1.4-8.4 pm expressed as chlorine", is not intended to be covered by this rejection. The examiner is only rejecting subject matter that is not encompassed by the claims indicated as allowable in US Patent Application No. 11/056,405, of which the only independent claim is recited above.

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2. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barak '628 (US 6,132,628) in view of Watanabe (US 4,476,930).

***Determination of the scope and content of the prior art***

**(MPEP 2141.01)**

Barak '628 teach a method and apparatus for treating a liquid to inhibit growth of living organisms therein by adding to the liquid an active biocidal ingredient formed by mixing a hypochlorite oxidant and an amine source (Abstract). The amine source may be selected from an oxidizable nitrogen derivative, preferably from the group of *ammonium salts*, organic amines, sulfamic acid, hydrazine, dimethylhydantoin, cyanuric acid benzotriazole, hexamethylene diamine, ethylenediamine, ethanolamine, or mixtures thereof, and is present in a concentration of 0.1-50%, more preferably 2.5-30%, and could be equimolar to  $\text{Cl}_2$ , with the diluted amine source having a concentration of 0.1-6% and is equimolar to  $\text{Cl}_2$  (col. 2, ln. 53-63). The oxidant is preferably selected from the group of sodium hypochlorite and calcium hypochlorite, and has a concentration of 0.3-15%, more preferably 5-15%, expressed as  $\text{Cl}_2$ , with the diluted oxidant having a concentration of 0.1-2% (col. 2, ln. 64-67 and col. 3, ln. 1-4). Preferably, the amine source is an ammonium salt containing a halide, sulfate, nitrate, carbonate, bromide, or mixtures thereof, and the oxidant is sodium hypochlorite (col. 5, ln. 1-7). See also claims 1-23.

***Ascertainment of the difference between the prior art and the claims***

**(MPEP 2141.02)**

Barak '628 do not specifically teach the ammonium salt to comprise ammonium carbamate, as instantly claimed. However, Watanabe teaches a method for treating a water-containing fluid stream passing through a conduit to inhibit the formation of scale deposited on the conduit and/or dissolve any such scale already formed (Abstract). Watanabe further teach that ammonium salts including ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate all dissociate into ammonium and acid when treating said aqueous systems (col. 5, ln. 50-60; col. 6, ln. 37-42; and col. 8, ln. 9-1), and therefore the ammonium salts are functionally equivalent to one another.

Regarding the concentration of hypochlorite oxidant in said aqueous solution immediately prior to mixing with ammonium carbamate being not more than 24,000 ppm as total chlorine (claim 99), Barak '628 teaches that the concentration of hypochlorite oxidant at  $t = 0$  (i.e., immediately prior to mixing) is not more than 24,000 ppm (for example, see Tables 1-5). Also, Barak '628 teaches that the diluted oxidant has a concentration of 0.1-2%, expressed as  $\text{Cl}_2$  (col. 3, ln. 3-4; and claim 20).

Regarding the concentration of ammonium carbamate in an aqueous solution being 0.5-60% w/v prior to mixing with the hypochlorite oxidant solution (claim 100), Barak '628 teaches that the concentration of amine salt is more preferably 2.5-30% (col. 2, lines 60-63; and claims 11-13). This is within Applicant's concentration of 0.5-60%.

Regarding said mixing takes place in a mixing chamber into and out of which there is a continuous flow of water during said mixing (claim 101), and said producing said oxidant in situ in a conduit (claims 106-108), Barak '628 claim continuously mixing

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oxidant and amine source to produce the active biocidal ingredient and continuously injecting said active biocidal ingredient, as it is produced in situ in said conduit, directly from said conduit into the liquid being treated (Abstract; col. 1, ln. 48-67; col. 2, ln. 1-44; and claims 1 and 20-22).

Regarding the choice of medium being waste water or reclaimed waste water (claim 111), Barak '628 teaches that the compositions are intended to treat liquid such as water in a cooling tower, waste water, or the like (col. 3, lines 36-40). Therefore, one skilled in the art would reasonably expect the biocidal compositions to be useful in aqueous systems containing waste water.

Regarding the concentration of the biocide immediately prior to being applied to said medium is from 1000-12,000 ppm expressed as total chlorine (claims 122), and the concentration of the biocide in said medium, upon application of the biocide to said medium, being 0.5-300 ppm expressed as chlorine (claim 123), Barak '628 teaches that the active biocidal ingredient produced in situ is injected into the liquid being treated preferably at a concentration of 0.5-300 ppm, more preferably 3-10 ppm, expressed as chlorine (col. 2, lines 49-52; and claims 8 and 9). The larger range is exactly the same as that of the claimed invention; one skilled in the art would readily be able to determine the concentration of biocide prior to being applied to said medium by routine experimentation, in order to arrive at the desire final concentration.

Regarding the biocidal efficacy within 1 hour of application to said medium (claim 124), the compositions of Barak '628 demonstrate reductions in the number of

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microorganisms of greater than 50% within 1 hour (see Tables 6 and 7), and therefore are effective within 1 hour of application to the medium.

Regarding the inclusion of a bromide (claim 129), Barak '628 teaches ammonium bromide as a suitable amine source and an active biocidal ingredient derived from ammonium bromide exhibited superior efficacy and faster rate of kill in basic media as compared to active biocidal ingredients derived from other amine sources (col. 3, ln. 20-23). Therefore, it would have been obvious to include ammonium bromide in the preparation of the active biocidal ingredient.

### **Finding of *prima facie* obviousness**

#### **Rational and Motivation (MPEP 2142-43)**

Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art at the time of the invention to select ammonium carbamate or ammonium sulfamate as the amine source in the composition of Barak '628; thus arriving at the claimed invention. One skilled in the art would have been motivated to do so because ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate are all sources of amine and acid in water treatment compositions as taught by Watanabe, and therefore are functionally equivalent to one another. Since Watanabe teaches that ammonium salts, including ammonium carbamate, ammonium sulfamate, and the ammonium salts of Barak, would dissociate into ammonium and acid in an aqueous environment, ammonium carbamate and ammonium sulfamate would function in an equivalent manner to the ammonium salts and organic amines cited in Barak. Therefore, it would be well within the purview of the

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skilled artisan to choose either compound as the amine source of the composition of Barak '386, since the prior art establishes the functional equivalency of ammonium carbamate or ammonium sulfamate and ammonium nitrate, ammonium sulfate, and ammonium carbonate.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 130-133 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 384, 387, 388, 390, 391, 395-398, 401, 403-410, 417, 418 and 420 of copending Application No. 11/056,405 in view of US 5,976,386. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a method for controlling microbial or biofilm growth in a medium, the method comprising mixing ammonium carbamate and an aqueous solution of sodium hypochlorite oxidant to form a biocide. The instant claims are drawn to a method for controlling microbial or biofilm growth in waste water or reclaimed waste water, the method comprising mixing ammonium carbamate and an aqueous solution of sodium hypochlorite oxidant to form a biocide. The independent

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claim of copending '405 Application does not recite that the medium is waste water or reclaimed waste water, or that the hypochlorite oxidant is sodium hypochlorite. However, claim 391 lists lithium, sodium, calcium, magnesium and potassium hypochlorites as suitable hypochlorite oxidants. Therefore, one of ordinary skill in the art would be reasonably motivated to choose sodium hypochlorite from this list since the list only comprises 5 possible hypochlorite oxidants. Also, claim 398 specifically recites that the medium is waste water or reclaimed waste water. Therefore, one of ordinary skill in the art would be reasonably motivated to treat waste water or reclaimed waste water with ammonium carbamate and an aqueous solution of sodium hypochlorite oxidant according to the copending '405 Application.

With regard to instant claim 99, copending '405 Application claim 387 recites that the concentration of hypochlorite oxidant in said aqueous solution immediately prior to mixing with ammonium carbamate is not more than 24,000 ppm as total chlorine.

With regard to instant claim 100, copending '405 Application claim 388 recites that the ammonium carbamate is in an aqueous solution at a concentration of 0.5-60% w/v immediately prior to mixing with said hypochlorite oxidant solution.

With regard to instant claims 101, 106 and 107, copending '405 Application does not claim that the mixing takes place in a mixing chamber into and out of which there is a continuous flow of water from a conduit during said mixing, nor that said solution of hypochlorite oxidant is prepared in situ in said conduit prior to addition of said solution of ammonium carbamate. However, US '386 discloses continuously mixing oxidant and amine source to produce the active biocidal ingredient and continuously injecting said



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active biocidal ingredient, as it is produced in situ in said conduit, directly from said conduit into the liquid being treated (Abstract; col. 1, ln. 48-67; col. 2, ln. 1-44; and claims 1 and 20-22). Therefore, one of ordinary skill in the art would have been motivated to produce the biocidal agent in situ by mixing the ammonium carbamate and hypochlorite oxidant solutions in a conduit.

With regard to instant claim 108, copending '405 Application claim 395 recites that ammonium carbamate is diluted prior to mixing with said hypochlorite oxidant.

With regard to instant claim 122, copending '405 Application claim 408 recites that the concentration of the biocide immediately prior to being applied to said medium is from 1000 to 12,000 ppm expressed as total chlorine.

With regard to instant claim 123, copending '405 Application claim 384 recites that the concentration of said biocide in said medium, upon application of the biocide to said medium, is 1.4 to 8.4 ppm.

With regard to instant claim 124, copending '405 Application claim 410 recites that the biocide is effective within 1 hour of application to said medium.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

2. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-133 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 5,976,386. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims

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are drawn to a method for controlling microbial or biofilm growth in a medium, the method comprising mixing an amine source and an aqueous solution of sodium hypochlorite oxidant to form a biocide. US '386 does not claim that the amine source is ammonium carbamate. However, Watanabe teaches a method for treating a water-containing fluid stream passing through a conduit to inhibit the formation of scale deposited on the conduit and/or dissolve any such scale already formed (Abstract). Watanabe further teach that ammonium salts including ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate all dissociate into ammonium and acid when treating said aqueous systems (col. 5, ln. 50-60; col. 6, ln. 37-42; and col. 8, ln. 9-1), and therefore the ammonium salts are functionally equivalent to one another. Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art to use ammonium carbamate as the amine source in US '386 since ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate are all functionally equivalent.

3. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-133 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,132,628. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a method for controlling microbial or biofilm growth in a medium, the method comprising mixing an ammonium salt and an aqueous solution of sodium hypochlorite oxidant to form a biocide. US '628 does not claim that the ammonium salt

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is ammonium carbamate. However, Watanabe teaches a method for treating a water-containing fluid stream passing through a conduit to inhibit the formation of scale deposited on the conduit and/or dissolve any such scale already formed (Abstract). Watanabe further teach that ammonium salts including ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate all dissociate into ammonium and acid when treating said aqueous systems (col. 5, ln. 50-60; col. 6, ln. 37-42; and col. 8, ln. 9-1), and therefore the ammonium salts are functionally equivalent to one another. Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art to use ammonium carbamate as the ammonium salt in US '682 since ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium carbonate, and ammonium carbamate are all functionally equivalent.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Schlientz whose telephone number is 571-272-9924. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NWS

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